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(54) **FLUORESCENT FOIL**

FLUORESZIERENDE FOLIE

FEUILLE FLUORESCENTE

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## Description

This invention relates to an adhasive fluorescent foil, especially for use within the sign and advertising trade, and particularly of the kind further defined in the preamble of the following claim 1.

In one field of application for such fluorescent foils within the sign and advertising trade, the foil is cut to letters and/or figures, emblems, logograms and the like which are adhered onto e.g. a window pane or a corresponding disc or plate of glass, plexiglass or similar transparent/translucent material which thereby constitutes a carrier for the sign/advertisement. In order to give the sign/advertisement the desired glowing neon-like effect, the same must be illuminated by means of socalled invisible or black light.

There exist adhesive fluorescent foils of this kind. These known sign/advertisement-foils are white and non-translucent. At one side face thereof, a layer of fluorescent matter has been applied to these foils, the opposite side face carrying an adhesive layer having an external protective paper layer to be torn off and which serves to protect the adhesive layer prior to the time of use.

When adhered onto e.g. a glass or plexiglass pane, these known foils in the form of letters and/or figures will exhibit a front face (the external surface of the fluorescent layer) and a rear side (the interface between the adhesive layer and the adjacent pane face), the intermediate, carrying, white and non-translucent foil layer preventing illumination through the layers when said front face is illuminated by black light. The sign and/or advertising letters etc. have the very same shape as seen from said rear side, but an attractive "advertising effect" cannot be obtained there, this representing an obvious disadvantage in the fields of application concerned.

Likewise, it represents a serious disadvantage and a limitation of use that the illuminating source for black light must be positioned at that side to which the fluorescent layer is facing. With such an external or outdoor positioning of the light source, the latter is subjected to theft and wilful damage, and the placement of such signs and/or advertisement on cars is practically out of the question. With outdoor sign/advertisement, the absolutely necessary external positioning of the fluorescent layer will cause its deterioration, wearing and damage through external influences, sun, weather and wind.

These deficiencies, disadvantages and application limitations in adhesive fluorescent sign/advertisement-foils are in so far remedied to a certain degree by means of a foil of the kind concerned made of a translucent foil material admixed colouring matter and fluorescent matter, Such a foil is disclosed in Norwegian patent application No. 902755 which corresponds to EP-A-0 535 036 (prior art under Art. 54(3)(4) EPC).

Nevertheless, the adhesive fluorescent foil according to Norwegian patent application No. 902755 has application limitations and, thus, cannot be used to create special decorative effects such as - when adhering two corresponding mirror-symmetrical overlapping foil letters/figures, one at each side of a glass or plexiglass pane - the two mirror-symmetrical letters/figures being given a different colour, and wherein one may alternate between the colours singly and in combination through alternating illumination from two illumination sources for black light, one at each side of said pane.

The fluorescent foil according to Norwegian patent application No. 902755 is not protected against UV-radiation; this shortening its useful life substantially.

In DE 27 39 081 A1 (=US-A-4 213 153) a process for the optical display of information is disclosed. This process comprises impinging laser beams which are modulated in the intensity and/or their frequency upon a transparent target which contains fluorescent substances which are excited to optical fluorescence by the laser beams. The fluorescent substances are fluorescent ions or dyes, wherein by the appropriate selection of the fluorescent ions or dyes and by the proper selection of the concentration the desired transmission in the visible range, a certain grey tint or color tone can be adjusted. A filter can be applied to the side facing away from the laser beam source, which will pass only visible light and will be impermeable to ultraviolet light. This filter prohibits a diffuse excitation of the fluorescent substance by the ultraviolet component of the sun light. This known process is provided to display information patterns at the wind shield of an aircraft or a motor vehicle.

In US 4,913,946 a fluorescent adhesive tape for use as a high-lighter is described. The tape consists of a transparent or semi-transparent film to which there are applied a layer of fluorescent colored ink of high dry-substance content, and a layer of adhesive or low adhesive power which allows removal of a support without alteration of the support.

The object of the invention is to provide an adhesive fluorescent foil comprising an admixed fluorescent matter and a coloring matter which has a long lifetime.

The invention is solved by an adhesive fluorescent foil according to claim 1. Preferred embodiments of the invention are characterized in the sub-claims.

According to the invention the fluorescent foil consists of a prolonged lifetime in association with advertisements constantly being subjected to sun beams. The prolonged lifetime is achieved by the provision of a translucent layer which is impermeable or substantially impermeable to ultraviolet rays. The useful lifetime corresponds to several -times the lifetime of an ordinary foil being obtainable.

The invention also comprises a signboard, e.g. a name or advertising signboard comprising a translucent disc having at both sides attached fluorescent foils formed according to the invention, and having different colour or colours at the two sides, as well as being cut to letter, figure or other constituents (components, parts), which at one side of the translucent disc are at-

tached right side up, while the cooperating/completing letter, figure or other constituents in opposed positions at the other side of the translucent disc are attached in a mirror-symmetrical relationship to the first-mentioned letter constituents etc.

A technical effect obtained by means of the present invention consists in that one by means of the fluorescent translucent coloured foils cut in the form of letters, figures, emblems, logograms etc. makes possible their neon-like glowing in different colours at different times, so that particularly conspicuous advertising-technical effects are achieved, said effects - apart from the alternating colours - give a three-dimentional effect wherein the apparent depth far exceeds the thickness of the foils plus the glass or plexiglass pane/disc they have been adhered unto. These effects will be further explained in connection with the following description when reference is being made to illustrative drawing figures.

Examples of the embodiment and use of the subject matter of the invention are defined in the following with reference to the accompanying drawings, wherein:

Figure 1 shows a greatly enlarged partial view of a foil according to the invention, as seen toward one side edge;

Figure 2 shows on the very same excessive scale as well as seen toward one side edge a partial view of a glass/plexiglass disc which e.g. may constitute a name and/or advertisement signboard according to the invention or a fixed (window) pane, wherein two sets of identically shaped foil letters, figures or the like having different colours have been adhered in mirror-symmetrically opposing, partly overlapping positions;

Figure 3 shows a stylistic R cut from two differently coloured foils in accordance with the invention, wherein the inner letter core itself, which in per se represents an entire letter, is thought adhered onto one side of a glass or plexiglass disc/pane, the internal and external R-contour portions, which in per se represent an entire letter, are thought adhered onto the opposite side of said disc or pane in mirro-symmetrically opposing positions, surrounding the R-core.

With reference to figure 1, reference numeral 1 denotes a fluorescent foil, especially of the kind made from a translucent foil material admixed colouring matter and fluorescent matter. To one side of the foil, a translucent/transparent adhesive layer 2 has been applied. A tear-off socalled backing paper 3, e.g. of silicone paper, serving to protect the adhesive layer 2 prior to the actual use thereof and of the foil 1, is, for a illustrative purpose, shown in dotted lines.

In accordance with the present invention, a translucent/transparent layer 4 has been placed between the foil 1 itself and the adhesive layer 2, said layer 4 e.g. consisting of benzotriazole or benzophenon, and being impermeable or substantially impermeable to ultraviolet rays, the main purpose and side effects of which being described in the following in connection with figure 2 in association with figure 3. In the following, the layer 4 will - due to the above-mentioned properties thereof - be called a UV-barrier layer.

The material of the UV-barrier layer 4 is not critical for the present invention and the desired properties thereof, namely to prevent passage of ultraviolet rays or to prevent substantial penetration of such rays, respectively, may in principle be achieved by means of filter materials and/or by means of ultraviolet absorption means available on the market in many translucent/transparent types based on stopping, filtration and/or absorption.

Now, reference is made to figure 3.

Because the letter R shown is composed of two foils having different colour, the two foils from which the letter portions have been cut, are denoted 5 and 5', respectively.

The internal and external R-contour portions 5' in correctly facing positions (with regard to the backing paper 3) may e.g. be made from a red-coloured foil according to figure 1, while the R-core 5 may have a blue colour and take a mirror-symmetrical position relative to the R-contour portions 5'.

Reference is now made to figure 2 in connection with figure 3.

In figure 2, reference numeral 6 denotes a disc of translucent/transparent material and which may be incorporated as a carrying member in e.g. a name and/or advertisement signboard, or which may be constituted by a window pane or similar glass or plexiglass pane in a building, a vehicle etc.

The R-contour foil portions 5' having the assumed red colour are, according to figure 2, adhered onto one side 6' of the glass disc/signboard 6, while the R-core foil piece 5 having the assumed blue colour are adhered onto the opposite side 6" of the glass disc/signboard 6 in such a manner that the stylistic R-letter, as seen toward the side 6' of the signboard/glass disc 6, appears as illustrated in figure 3 (opposing letter pieces 5,5' wherein 5 is facing mirror-summetrically in relation to 5', the letter pieces 5' surrounding the letter piece 5).

Two known light sources 7,7' for the generation of black light and illumination of the fluorescent foils 5,5', are placed one at each side of the glass disc/signboard 6.

When both these light sources 7,7' are on, each illuminating a foil letter 5 or 5', respectively, of its own, with black light, i.e. the signboard/glass disc 6 is being illuminated from opposite sides, both foil pieces 5,5' will glow neon-like, but in a different colour (blue and red, respectively).

As black light sources 7,7', several different kinds may be used, e.g. projectors, search-lights, fluorescent

lamps etc.

Fluorescent foils 5,5' having UV-barrier layer 4, or name and/or advertisement signboards, respectively, based on such foils, render possible very special advertising-technical effects:

One assumes that the projectors, search-lights etc. 7,7' for black light according to figure 2 are coupled to an electrical time-leg relais adapted to be activated/deactivated in accordance with a certain program, using technology known per se.

In an elucidating example, one takes as a starting-point a time of 9 seconds starting with said relais activating light source 7', which illuminates the signboard/glass disc 6 in the direction toward the outer face 6', thereby bringing the red colour of the fluorescent foil 5' to glow neon-like. Because of the UV-barrier layer 4 of the foil 5, the blue colour of the foil 5 will not be activated. This condition may e.g. last for 2 seconds.

After the expiry of said 2 seconds, the time-leg relais is adapted to disconnect the light source 7' and to connect the light source 7, the latter than bringing the blue colour of the fluorescent foil 5 to glow neon-like. Because of the UV-barrier layer 4 of the foil 5', the red colour of the fluorescent foil 5' will not be activated. This condition also may last for 2 seconds.

The time-leg relais may thereafter be adapted to connect both light sources simultaneously, activating both foils 5,5' at the same time and giving. maximum advertising effect having a three-dimensional special effect far exceeding the actual total thickness of the two foils 5,5' and the glass disc 6. Within this time-controlled program a pause of 2 seconds may thereafter be incorporated, no illumination whatsoever taking place. Then, the above-mentioned "variation" time of 9 seconds is terminated. Such a periodical alternating between single colours/letter portions and two-colour combination may take place according to a 24 hours program of operation.

Adhesive fluorescent foils cut to letters, letter combinations, figures, logograms, emblems etc. are always illuminated i the direction toward the fluorescent layer of colouring matter.

In signboards made in accordance with the invention, the mutually opposing differently coloured foil pieces 5,5' adhered onto opposite sides of a disc-like translucent/transparent carrying signboard element 6 will ordinarily have the form of letter and/or figure constituents completing each other or cooperating in one way or the other, especially when the two foil pieces 5,5' are illuminated simultaneously. However, if one disregards the momentary effect, there is also achieved over a certain time (e.g. 9 seconds) a cooperating completing effect of a great advertisting value (attracts great attention due to its originality and aesthetically attractive "radiation").

**Claims**

1. Adhesive fluorescent foil (5, 5'), especially for use within the sign and advertising trade, comprising a translucent/transparent foil material (1) said foil (1) comprising an admixed fluorescent matter and a colouring matter, characterized in that the adhesive fluorescent foil (5,5') is provided with a translucent layer (4) which is impermeable or substantially impermeable to ultraviolet rays (UV-rays).

2. Fluorescent foil according to claim 1, whereby the foil (5,5') is provided with a translucent adhesive layer (2).

3. Fluorescent foil according to claim 2, whereby the translucent layer (4) is placed between the fluorescent foil (1) and the translucent adhesive layer (2).

4. Signboard, e.g. name and/or advertisement signboard, comprising a translucent disc (6), whereby said disc (6) has attached at both sides (6',6") thereto a fluorescent foil (5, 5') as defined in claim 2 or 3 and whereby the foils (5,5') are attached in a mirror-symmetrical relationship thereto and each foil (5,5') is irradiated with a separate UV-light source (7,7').

5. Signboard according to claim 4, whereby the foils (5,5') are cut to letters, figures or other constituents.

6. Signboard according to claim 4 or 5, whereby the foils (5,5') have different colour or colours.

7. Signboard according to one or more of the claims 4 to 6, whereby the foils (5,5') are attached in a correctly facing design.

**Patentansprüche**

1. Klebende fluoreszierende Folie (5, 5'), insbesondere für die Verwendung bei Schildern und in der Werbung, mit einem durchscheinenden/transparenten Folienmaterial (1), wobei das Folienmaterial (1) einen zugemischten fluoreszierenden Stoff und einen farbgebenden Stoff aufweist, dadurch gekennzeichnet, daß die klebende fluoreszierende Folie (5, 5') mit einer durchscheinenden Schicht (4) versehen ist, die für ultraviolette (UV-) Strahlen undurchdringlich oder im wesentlichen undurchdringlich ist.

2. Fluoreszierende Folie nach Anspruch 1, bei der die Folie (5, 5') mit einer durchscheinenden klebenden Schicht (2) versehen ist.

3. Fluoreszierende Folie nach Anspruch 2, bei der die durchscheinende Schicht (4) zwischen der fluores-

zierenden Folie (1) und der durchscheinenden klebenden Schicht (2) angeordnet ist.

4. Schild, d.h. ein Namens- und/oder Werbungs-Schild, mit einer durchscheinenden Scheibe (6), wobei auf beiden Seiten (6', 6") dieser Scheibe (6) eine fluoreszierende Folie (5, 5') gemäß Anspruch 2 oder 3 befestigt ist, und wobei die Folien (5, 5') in einem spiegelsymmetrischen Verhältnis zur Scheibe befestigt sind und jede Folie (5, 5') von einer unabhängigen UV-Lichtquelle (7, 7') bestrahlt wird.

5. Schild nach Anspruch 4, bei dem die Folien (5, 5') in Buchstaben, Figuren oder andere Bestandteile ausgeschnitten sind.

6. Schild nach Anspruch 4 oder 5, bei dem die Folien (5, 5') unterschiedliche Farbe oder Farben aufweisen.

7. Schild nach mindestens einem der Ansprüche 4 bis 6, bei dem die Folien (5, 5') in einem korrekt einander gegenüberliegenden Aufbau befestigt sind.

**Revendications**

1. Feuille fluorescente adhésive (5, 5'), en particulier pour utilisation dans un panneau d'indication ou de publicité, comprenant un matériau (1) en feuille translucide/transparent, ladite feuille (1) comprenant incorporées une matière fluorescente et une matière colorante, caractérisée en ce que la feuille fluorescente adhésive (5, 5') est pourvue d'une couche translucide (4) qui est imperméable ou essentiellement imperméable aux rayonnements ultraviolet (UV).

2. Feuille fluorescente suivant la revendication 1, dans laquelle la feuille (5, 5') est pourvue d'une couche adhésive translucide (2).

3. Feuille fluorescente suivant la revendication 2, dans laquelle la couche translucide (4) est placée entre la feuille fluorescente (1) et la couche adhésive translucide (2).

4. Panneau d'indication, notamment panneau comportant un nom et/ou une information, comprenant un disque translucide (6), où ledit disque (6) comporte liée à chacune de ses deux faces (6', 6") une feuille fluorescente (5, 5') telle que définie dans la revendication 2 ou 3, les feuilles (5, 5') étant disposées de façon symétrique par rapport à un miroir, et chaque feuille (5, 5') étant irradiée au moyen d'une source séparée d'UV (7, 7').

5. Panneau d'indication suivant la revendication 4, dans lequel les feuilles (5, 5') sont découpées en lettres, nombres ou autres éléments.

6. Panneau d'indication suivant la revendication 4 ou 5, dans lequel les feuilles (5, 5') ont une couleur différente ou sont de couleurs différentes.

7. Panneau d'indication suivant l'une quelconque des revendications 4 à 6, dans lequel les feuilles (5, 5') sont liées selon un motif concordant.

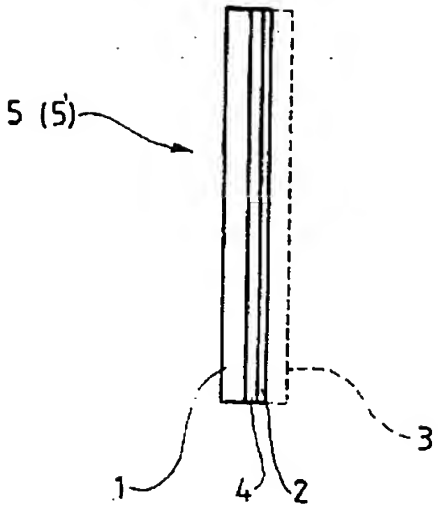


Fig.1

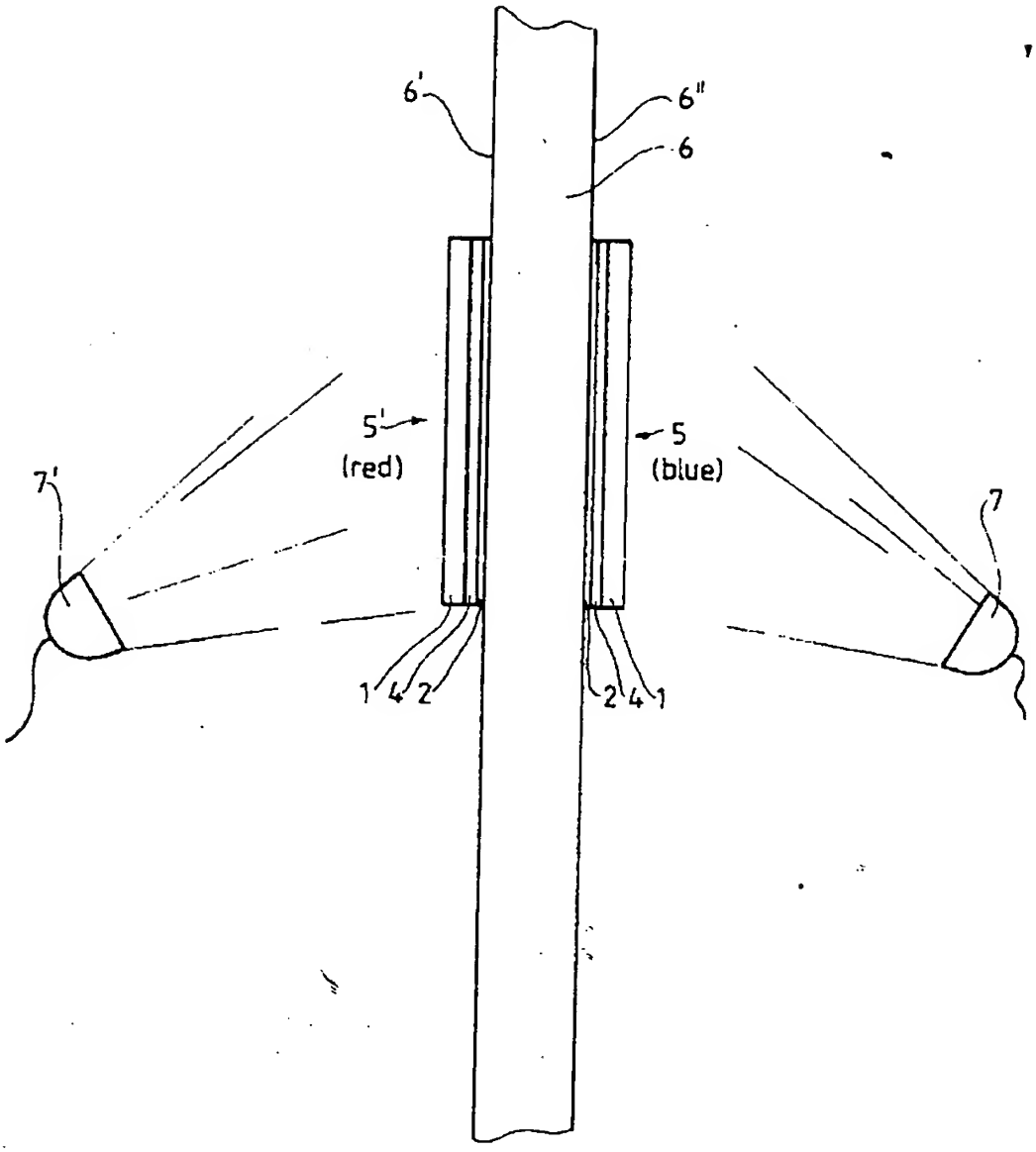


Fig. 2

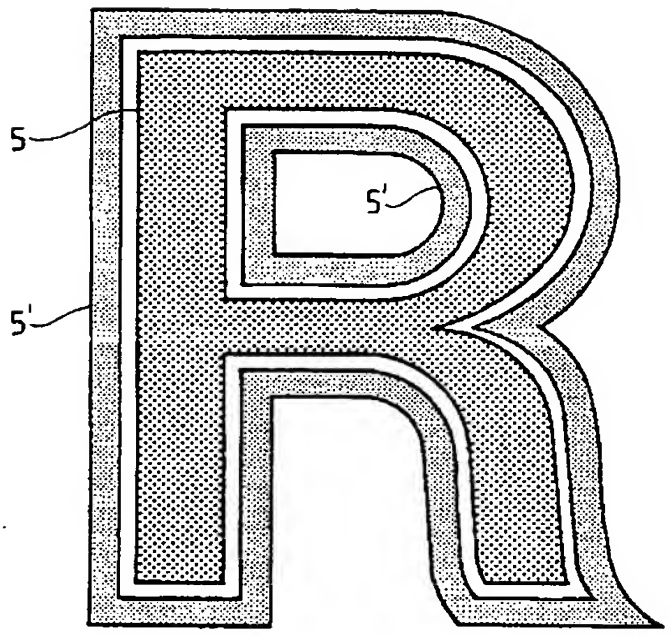


Fig.3